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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,568	09/28/2005	Haruyuki Sato	0425-1171PUS1	4200
2292 7590 01/07/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER CORDRAY, DENNIS R	
			ART UNIT 1791	PAPER NUMBER
			NOTIFICATION DATE 01/07/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/521,568

Applicant(s)

SATO, HARUYUKI

Examiner

Dennis Cordray

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6,7,11-14,16-20,22-24,26 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11,2,6,7,11-14,16-20, 22-24 and 26-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Examiner's Note

It is noted that, although Applicant states that new claims 25-26 are added, the submitted amendment adds new claims 26 and 27. Claim 25 has been omitted.

Response to Arguments

Applicant's amendments have overcome the rejections of claims over Branham et al. The rejection has been withdrawn.

Applicant's arguments against Zhang et al, filed 10/23/2007, have been fully considered and are partially persuasive. Zhang et al does not explicitly disclose the number of ethylene oxide adducts in the ethoxylated alcohol. The rejection under 35 U.S.C. 102 has been withdrawn, but the rejection under 35 U.S.C. 103 is maintained.

Applicant argues on pp 17-18 that Zhang et al adds the surfactant to the monomer solution to solubilize the hydrophobic monomer for polymerization, which is very distinct from the instant invention.

The instant claims recite adding the paper quality improver anywhere before making paper. Zhang et al adds the surfactant to the monomer solution, polymerizes the monomers, then adds the polymer dispersion (including surfactant) to the papermaking process as a retention and drainage aid. Addition of retention and drainage aids to the furnish prior to forming paper is an important part of the papermaking process to retain furnish components in the paper as it is being formed and drained and to assist drainage of excess water from the formed nascent web (see Fallon, 5571380, col 1, lines 27-42 if evidence is needed). Thus, the surfactant is also

added to the furnish prior to the forming or paper or, at least, such addition would have been obvious to one of ordinary skill in the art as a typical process.

Applicant also argues that Zhang et al fails to teach a water soluble alcohol alkylene oxide adduct containing an alkylene oxide group having 2 to 4 carbons in an average amount of 5 to less than 150 moles per mole of alcohol.

Zhang et al discloses that the surfactant can be an ethoxylated phenol with 5-20 ethylene oxide units per molecule or ethoxylated alcohol (col 2, lines 32-36; col 10, lines 12-15 and 21-29). While the number of ethylene oxide adducts is not explicitly stated for the ethoxylated alcohol, such ethoxylated alcohols are well known nonionic surfactants used in emulsion polymerization (see Biale, 3714096, col 5, lines 27-40). One of ordinary skill in the art would have found it obvious to use an amount of ethylene oxide units within the claimed range as a typical nonionic surfactant well known in the art. The surfactants are the same as those claimed, thus are water soluble.

The rejections have been modified to account for the amendments and, in addition, new grounds of rejection are presented due to the amendments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 26 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding Claim 26, the instant Specification (paragraph bridging p 26 to 27) that the copolymer (A) and surfactant (B) as a mixture or separately in the papermaking step. The last paragraph of p 27 states that the paper quality improver is added in any step before the papermaking step and is favorably added anywhere before the papermaking step when a paper layer is formed. There is no disclosure of the copolymer (A) and surfactant (B) being added separately before the papermaking step, only in the papermaking step.

Regarding Claim 27, the instant Specification recites that the copolymer (A) and surfactant (B) may be added as a mixture or separately in the papermaking step. There is no disclosure of adding copolymer (A) and surfactant (B) in any specific order.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 6-7, 11-14, 16-20, 22-24 and 26-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Amended claims 1, 2 and 14 recite that the paper quality improver is anywhere before the papermaking step when a paper layer is formed. The claims fail to specify what is meant by "anywhere before the papermaking step." For instance, is the paper quality improver added in a pulping process, a bleaching process, a recycle stream, a

deinking process, a blend chest, the headbox, a storage tank, a fiber loading process, a reactor, a crosslinking process, in a pulp sheet or somewhere else. A great many operations can occur prior to the actual sheet forming process and one of ordinary skill in the art would not be able to understand the metes and bounds of the claimed invention.

Claims 1, 2 and 14 recite adding the paper quality improver to pulp in any step before the papermaking step, and later recite adding the paper quality improver anywhere before the papermaking step. The two phrases appear to be redundant, but are confusing because they recite the addition differently. It is not clear how the latter recitation of adding the paper quality improver anywhere before the papermaking step further limits the earlier recitation of adding the paper quality improver to pulp in any step before the papermaking step.

Claim 26 recites separate addition of copolymer A and surfactant B, but fails to specify whether the separate additions are at the same location or different locations in the process.

The remaining claims depend from and therefore inherit the indefiniteness of Claims 1, 2 or 14.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-2, 6-7, 11-14, 16-20, 22-24 and 26-27 are rejected under 35 U.S.C.103(a) as unpatentable over Zhang et al (6417268) in view of Fallon (5571380)

and as evidenced by Biale (3714096), Xiao et al (5747392) and Smook (Handbook for Pulp and Paper Technologists).

Claims 1-2, 12, 16-18 and 22-24: Zhang et al discloses a hydrophobically associative polymer (corresponds to co-polymer A) used as a retention and drainage aid in papermaking (Abs; col 4, lines 29-32; col 14, line 52 to col 16, line 63). The preferred polymer is at least a terpolymer comprising at least (1) a C₈-C₂₀ alkyl ester, (meth)acrylate esters being preferred monomers; (2) (meth)acrylic acid, an anionic monomer; and (3) acrylamide (col 5, lines 27-41; col 7, lines 46-53). The disclosed (meth)acrylate esters are claimed nonionic monomers having a solubility parameter of 20.5 or less, and the acrylamide has a solubility parameter of 26.6 or more. The (meth)acrylate ester is present in an amount up to 10 mole percent, (meth)acrylic acid in an amount from 1 to 99.9 mole percent and acrylamide in an amount from 1 to 99.9 mole percent (col 6, lines 19-35). Cationic monomers are also permitted in the amount from 1 to 99.9 mole percent (col 8, line 32 to col 9, line 25). The weight percent of the monomers can be calculated, as discussed in a previous Office Action, to reveal that disclosed polymer composition thus significantly overlays the claimed polymer A.

Zhang et al discloses a surfactant (corresponds to claimed surfactant B), which can be an phenol with 5-20 ethylene oxide units per molecule or an ethoxylated ethoxylated alcohol (col 2, lines 32-36; col 10, lines 12-15 and 21-29). The amount of surfactant is dependent on the amount of hydrophobic monomer A used and can be present in an amount from 0.1 up to 10 wt-% of the solution. Zhang et al does not disclose the concentration of polymer in the solution, but does provide examples

wherein the amount of active polymer is 15% of the solution weight (col 12, Example 2; col 14, Example 5). Using the range recited for the surfactant and a 15% polymer solution, the ratio of polymer to surfactant (claimed ratio A/B) can be calculated to be from 150/1 to 1/1.5, which significantly overlays the claimed range.

Zhang et al does not disclose the number of ethylene oxide units used to make the ethoxylated alcohol; however, such ethoxylated alcohols are well known nonionic surfactants used in emulsion polymerization (if evidence is needed, see Biale, col 5, lines 27-40). Absent evidence of non-obvious properties due to the claimed surfactant, one of ordinary skill in the art would have found it obvious to use the same range of ethylene oxide units as disclosed for the phenol. The disclosed surfactants are the same as the claimed surfactants, thus are water soluble.

Zhang et al does not disclose the paper quality improving effects. However, the disclosed composition is substantially the same composition as the claimed paper quality improver, thus will result in the claimed improved properties. Where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Zhang et al does not disclose a papermaking process wherein the polymer and surfactant are added to the pulp before making paper or filtering a dilute solution of the pulp through a wire while moving thereon. Zhang et al does disclose that the aqueous

dispersion containing the polymer and surfactant is used as a retention and drainage aid in a papermaking process (col 3, lines 17-23; col 4, lines 29-33; cols 14-16, Example 6).

Fallon teaches a typical papermaking process comprising forming a fiber mat on a moving wire from an dilute aqueous slurry and dewatering the slurry (filtering). Adding retention aids to the wet end is widely practiced and very important to the process (col 1, lines 14-42).

The art of Zhang et al, Fallon and the instant invention is analogous as pertaining to making paper using retention aids. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the claimed papermaking steps disclosed by Fallon as a typical process and to add the dispersion containing the polymer and surfactant disclosed by Zhang et al to the pulp as a retention and drainage aid prior to forming paper as a functionally equivalent option. The combination uses well known processes and known polymers and surfactants, with no change in their respective functions or operation to produce a predictable result to one of ordinary skill in the art.

Claim 6: The acrylamide is a crosslinkable monomer (for evidence, see Xiao et al, col 9, lines 39-42).

Claims 7: the surfactants disclosed by Zhang et al are the claimed surfactants, thus inherently have the claimed HLB values or, at least, it would have been obvious to one of ordinary skill in the art to obtain the claimed HLB values.

Claims 11 and 19: Zhang et al discloses a stabilizer, which can be a vegetable gum, polysaccharide, or a cellulose product (col 11, lines 20-22). While Zhang et al does not disclose the molecular weight or viscosity of the stabilizer, the broadly claimed range for molecular weight includes polysaccharides having from less than 10 to thousands of monomeric units. The broadly claimed values for viscosity range from the viscosity of water to very viscous compositions. Water soluble polysaccharides are available in a broad range of molecular weights and have a correspondingly broad range of solution viscosities. It is considered by the Examiner to have been obvious to one of ordinary skill in the art to use a polysaccharide within the claimed ranges as a functionally equivalent option.

The stabilizer is present in an amount from 0.05% to 10% by weight of the solution (col 2, lines 26-31; col 11, lines 30-34). Using the disclosed range for surfactant concentration and a 15% polymer concentration, the ratio of (polymer + surfactant)/stabilizer (the claimed ratio $[A+B]/C$) can be calculated to be from 500/1 to 1.51/1, which significantly overlays the claimed range.

Claim 13: The claimed papermaking speed is typical and would have been obvious to one of ordinary skill in the art (see Smook, p 324, Table 21-1).

Claim 14: Zhang et al does not disclose a paper made using the polymer and surfactant. However, because the composition is used as a retention and drainage aid in papermaking processes, it would have been obvious to make a paper or pulp sheet from a furnish comprising the composition, thus obtaining a paper or pulp sheet comprising the polymer and surfactant.

Claim 20: Zhang et al discloses that the molecular weight of the polymer is from 10,000 to 10,000,000, which significantly overlays the claimed value. While the method of measuring the molecular weight is not disclosed, it would have been obvious to one of ordinary skill in the art that the disclosed molecular weight range significantly overlays the claimed range.

Claim 22: Zhang et al discloses that the polymer is water soluble (col 2, lines 52-62; col 5, lines 27-29), thus the polymer and surfactant are soluble (col 10, lines 5-8).

Claims 26 and 27: It would have been obvious to one of ordinary skill in the art to adjust the amount of surfactant as necessary by adding surfactant to maintain a stable dispersion.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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